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VARIOUS.

COPPER ALLOYS AND SILVER FOR PRODUCING AN INTENSE BLACK COLOUR.

An intense lasting black precipitate is obtained from chloride of platinum fused in the open air on all copper alloys, as with red metal, brass, bell and cannon metal, as well as on silver alloyed with copper. The best mode of using the fluid precipitate is to slightly moisten the inner side of the thumb with it, and rub it hard upon the object to be blackened, which will be immediately covered with a black coating. This may afterwards be washed and polished with polishing leather and oil. Notwithstanding the high price of chloride of platinum, this process may be considered cheap on account of the productiveness of the preparation, and the simplicity of its application.

TO CLEAR IRON OF SCALES OR CRUST.

Herr Boden gives the following directions for effectually removing scales from iron objects that have been subjected to glowing heat, as sheet iron, wire, &c., and imparting to them an almost silvery-white surface, without any mechanical operation. They are to be laid for several hours in diluted sulphuric acid (one part of sulphuric acid to twenty of water), and, still further to weaken the action of the acid on the iron, some carbolic acid should be added. By this means the scale, or crust, is completely separated from the iron, and all that is afterwards required is to rinse the object with water, and lastly dry it with sawdust. If the object is in this way completely freed from scales, it may be laid for a moment in strong nitric acid, and then immediately washed and dried, after which the iron is pure, bright, and beautifully white. Care must be taken to avoid the red fume caused by putting the iron in nitric acid, the action of which may be strengthened by the addition of a little soot and salt.

TO HARDEN GYPSUM.

According to a recent statement, gypsum may be hardened by being mixed with three to four per cent. of powdered marsh-mallow root. The hardening follows in the course of an hour, and the mass is so hard that it may be sawn and turned. Gypsum may in this way be used for making dominoes, dice, &c. If the amount of marsh-mallow root be increased to 8 per cent., the hardness of the mass is further increased, so that it may be rolled out into thin plates, which can be painted, polished, and varnished.

TO CLEAN MARBLE.

Take finely powdered pumice-stone and vinegar, wash the surface with the mixture, and leave it for several hours, then brush it hard and wash it clean. When dry, rub it with whitening and wash-leather.

ELECTRO-IRON DEPOSITS.

The importance of the electro process as a means of multiplying works of art and useful objects, or covering metallic articles with a tin coating of another metal, for the purpose of preservation, or decoration, or both, is well known. The metal most frequently employed for making copies of objects is copper; for coating, use is made of lead, zinc, tin, brass, nickel, silver, gold, and platinum. Each of these metals possesses special advantages foi particular purposes. Iron, which combines many of these advantages, has nevertheless been hitherto little employed.

As far back as 1846, Böttger gave directions for obtaining electro deposits of iron, and employed for this purpose a solution of two parts by weight of green vitriol or sulphate of iron, and three of sal ammoniac in water: and in 1859 Jacquin adopted this method for steeling copper engraving plates. Klein made meritorious efforts to ascertain the conditions on which a coherent iron deposit may be obtained. For an iron bath he used substantially the same composition as Böttger, only instead of sal ammoniac, he made use of sulphate of ammonia $(SO^4Fe + SO^4(NH^4)^2 + 6H^2O)$ in concentrated aqueous solution. As anode he took an iron plate, but found it expedient to connect with this a copper plate also. He prevented the appearance of hollow, bubble-shaped spaces by moderating the current. As the iron deposit on gutta percha covered with plumbago was very slowly formed, he proposed first to produce a slight coppering, and then a steeling. The deposits obtained by Klein were very brittle and hard, but by being heated red-hot were rendered ductile, and as suitable for engraving as soft steel.

According to Warrentrapp, an iron wire is connected with the iron anode, and the anode and kathode are brought within 4" or 5" of each other. In the use of metal moulds Warrentrapp proposed first to silver them, and then by an atmosphere of hydrosulphuric acid to give them a yellow tint. The iron deposit then comes away easily. To keep air-bubbles from the model, it is moistened with alcohol by means of the well-known dusting tubes. As a suitable composition for the iron bath, Warrentrapp gives a solution of four parts by weight of green vitriol, and three of sal ammoniac in thirty of water.

Experiments made according to Warrentrapp's method have given very satisfactory results. With due caution the iron deposit is coherent, and fills up the forms with a sharp, clear, outline. It is of great consequence to pay attention to the regulation of the current, and advisable to have a weak one, even if the process is by that means somewhat lengthened.

The use of electro-iron deposits is highly to be recommended for stamps, printing plates, clichés, &c., which may be rendered much more durable and elegant by a subsequent nickelisation.

Stummer's Ingenieur.

CEMENT FOR OVENS.

A cement for covering the joints of ovens, which is said to be found excellent in practice and does not crack, but becomes very hard, may be made by mixing equal quantities of finely-sifted, wood-ashes and crushed and sifted clay, and adding some salt and sufficient water, to form it into a dough, with which the cracks are coated when the oven is cold. If this cement is employed instead of clay in setting new ovens, they will be almost indestructible.

PYROGRAPHY.

This name is applied by Herr Schuring, a drawing-master of Flensburg, to the art, which he has invented, of burning drawings into wood, and employing them for internal decoration wherever wood surfaces are to be adorned. Such drawings have already been put on sideboards, wainscoting, &c. They are remarkable for durability, warmth, and softness, and may be washed without sustaining and injury. *(Industrie-Blätter.)*

INDIAN INK FOR DRAWING.

To improve Indian ink for drawing, so that even the thickest lines will quickly dry, add one part of carbolic acid to 80 of the Indian ink. If, by mistake, too much has been added, it may be rectified by putting in more Indian ink. If the mixture is properly performed, the ink is as easy to draw with as it is without carbolic acid, but dries quickly, and may even be varnished without discharging.